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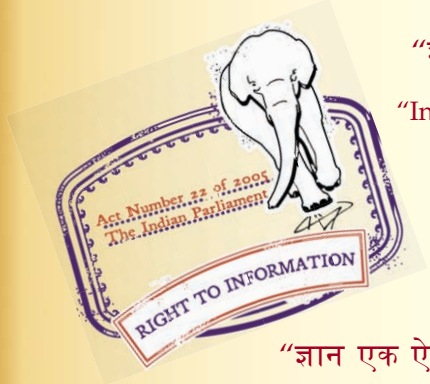

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(Reaffirmed 2012)

Indian Standard

SPECIFICATION FOR ZINEB, TECHNICAL

(First Revision)

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SPECIFICATION FOR ZINEB, TECHNICAL

(First Revision)

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AMENDMENT NO. 1 DECEMBER 1984

TO

IS : 3898-1981 SPECIFICATION FOR ZINEB, TECHNICAL

(First Revision)

(*Page* 3, *clause* **0.2**, *line* 4) — Substitute ' IS : 6940-1982* ' *for* ' IS : 6940-1973* '.

(*Page* 3, *foot-note with* ' * ' *mark*) — Substitute the following for the existing foot-note:

' *Methods of test for pesticides and their formulations (*first revision*).'

(*Page* 4, *Table* 1) — Substitute ' IS : 6940-1982* ' *for* ' IS : 6940-1973* '.

(*Page* 4, *Table* 1, *foot-note with* ' * ' *mark*) — Substitute the following for the existing foot-note:

' *Methods of test for pesticides and their fomulations (*first revision*).'

(*Page* 5, *clause* **4.1**) — Substitute the following for the existing clause with Note:

' **4.1** Representative samples of the material shall be drawn as prescribed in IS : 10946-1984*. '

(*Page* 5, *clause* **5.2**, *line* 2) — Substitute ' IS : 1070-1977† ' *for* ' IS : 1070-1977* '.

(*Page* 5, *foot-note with* ' * ' *mark*) — Substitute the following for the existing foot-note:

'*Methods for sampling of technical grade pesticides.

†Specification for water for general laboratory use (*second revision*).'

(*Page* 6, *clause* **A-3.1**, *second sentence*) — Substitute the following for the existing sentence:

'The temperature of the first and second absorber shall be maintained at 70°C and 25 ± 2°C respectively (by immersing the asborbers in a water-bath) throughout the test.'

(AFCDC 6)

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Indian Standard

SPECIFICATION FOR ZINEB, TECHNICAL

(First Revision)

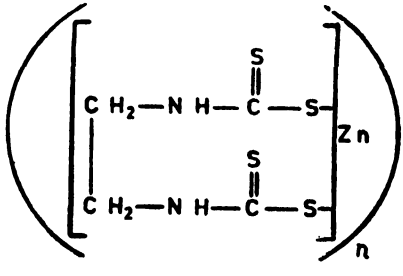
0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 28 July 1981, after the draft finalized by the Pest Control Sectional Committee had been approved by the Agricultural and Food Products Division Council and the Chemical Division Council.

0.2 This standard was first published in 1966. It has been revised to upgrade the purity of zineb content and to incorporate additional requirements for zinc content. Besides an opportunity has been taken to give reference to test methods prescribed in IS : 6940-1973* for the sake of uniformity.

0.3 Zineb, technical, is employed for the preparation of formulations, which are used for the control of fungus and bacterial diseases of plants.

0.4 Zineb is the accepted common name approved by the International Organization for Standardization (ISO) for the pesticidal chemical zinc ethylene-1, 2-bisdithiocarbamate. The empirical and structural formulae and molecular mass of zineb are as given below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_4H_6N_2S_4Zn$		275·8

0.5 In the preparation of this standard, due consideration has been given to the provisions of the Insecticides Act, 1968 and Rules framed thereunder.

*Methods of tests for pesticides and their formulations.

However, this standard is subject to the restrictions imposed under these wherever applicable.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for zineb, technical.

2. REQUIREMENTS

2.1 Description — The material shall be in the form of light coloured powder practically insoluble in water.

2.2 The material shall comply with the requirements specified in Table 1.

TABLE 1 REQUIREMENTS FOR ZINEB, TECHNICAL

Sl No.	Characteristic	Requirement	Method of Test, Ref to		
			Appendix of this Standard	Cl No. of IS : 6940-1973*	Appendix of IS : 8707-1978†
(1)	(2)	(3)	(4)	(5)	(6)
i)	Zineb content, percent by mass, *Min*	87	A	—	—
ii)	Moisture content, percent by mass, *Max*	1·5	—	4·2	—
iii)	Zinc content of zineb content, percent by mass	23·3 to 26·0	—	—	B

*Methods of tests for pesticides and their formulations.
†Specification for mancozeb, technical.

3. PACKING AND MARKING

3.1 Packing — The material shall be packed as per requirements given in IS : 8190 (Part 1)-1980†.

*Rules for rounding off numerical values (*revised*).
†Requirements for packing of pesticides : Part 1 Solid pesticides (*first revision*).

3.2 Marking — The container shall bear legibly and indelibly the following information in addition to other information as required under the Insecticides Act and Rules:

a) Name of the material;

b) Name of the manufacturer;

c) Date of manufacture;

d) Batch number;

e) Net mass of contents;

f) Zineb content, percent (*m/m*); and

g) Minimum cautionary notice worded as in Insecticides Act and Rules.

3.2.1 The containers may also be marked with the Standard Mark.

3.2.2 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act,* 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

4. SAMPLING

4.1 Representative samples of the material shall be drawn as prescribed in 'Indian Standard methods for sampling of pesticides and their formulations' (*under preparation*).

NOTE — Till such time the standard under preparation is published, the matter shall be as agreed to between the concerned parties.

5. TESTS

5.1 Tests shall be carried out as prescribed in col 4, 5 and 6 of Table 1.

5.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977*) shall be employed in the tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

*Specification for water for general laboratory use (*first revision*).

APPENDIX A

[*Table* 1, *Item* (i)]

DETERMINATION OF ZINEB, TECHNICAL

A-0. PRINCIPLE

A-0.1 Zineb is digested with sulphuric acid and the liberated carbon disulphide is allowed to react with alcoholic potassium hydroxide, and potassium methyl xanthogenate so produced is titrated with iodine.

A-1. REAGENTS

A-1.1 Lead Acetate Solution — 10 percent (*m/v*).

A-1.2 Sulphuric Acid — 1·1 N.

A-1.3 Methanolic Potassium Hydroxide Solution — 2 N, prepared by dissolving 112 g of pure potassium hydroxide in one litre of anhydrous methanol.

A-1.4 Dilute Acetic Acid — 30 percent (*v/v*).

A-1.5 Standard Iodine Solution — 0·1 N.

A-1.6 Starch Indicator Solution — freshly prepared.

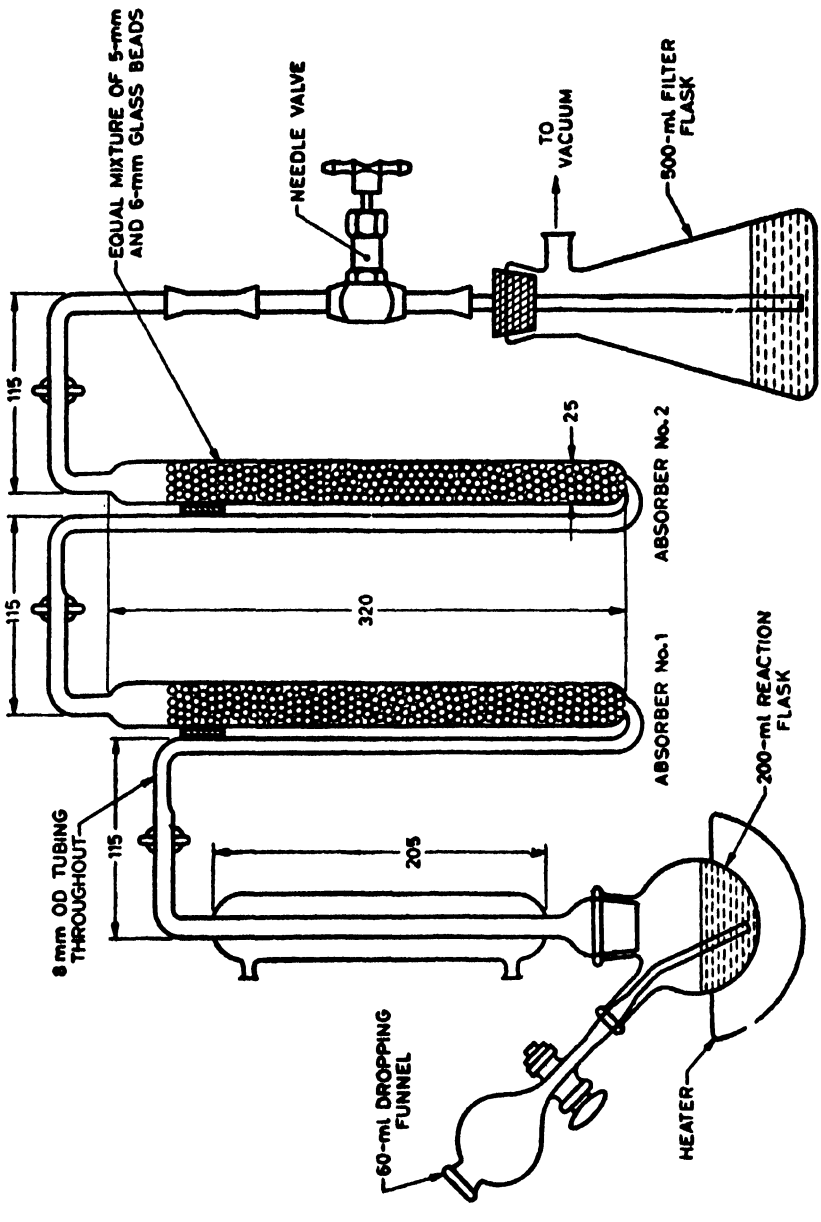
A-1.7 Phenolphthalein Indicator Solution — one percent (*m/v*), in 96 percent ethyl alcohol.

A-2. APPARATUS

A-2.1 The apparatus shall be as shown in Fig. 1 and consists of a 200-ml flask fitted with a condenser with an outlet tube connected to two absorbers and a 500-ml filter flask serving as a bubbler. The latter in turn is connected to a water suction pump. An alternative assembly as illustrated in Fig. 2 can also be used.

A-3. PROCEDURE

A-3.1 Weigh accurately about 0·3 g of the material and transfer it into the 200-ml reaction flask and connect it to the two absorbers, the first containing lead acetate solution (35 ml) to precipitate sulphides while the other a solution of potassium hydroxide in methanol (35 ml). The temperature of the second absorber shall be maintained at 25 ± 2°C (by immersing the absorber in a water-bath) throughout the test. Apply suction to



All dimensions in millimetres.

FIG. 1 ASSEMBLY OF APPARATUS FOR THE DETERMINATION OF ZINEB CONTENT

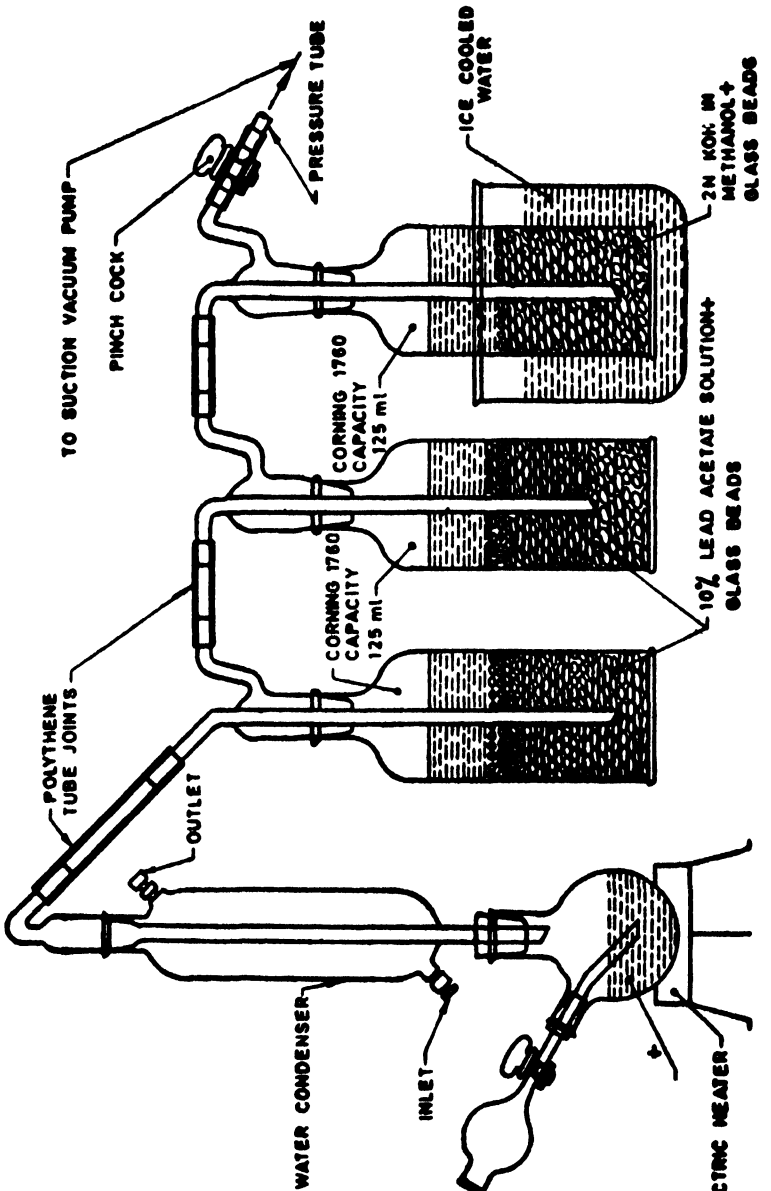


FIG. 2 AN ALTERNATIVE ASSEMBLY OF APPARATUS FOR THE DETERMINATION OF ZINEB CONTENT

the system and adjust the bubbling rate to 3-4 bubbles per second in the bubbler containing distilled water. Add 50 ml of sulphuric acid 1·1 N through an inlet tube and heat the contents of the reaction flask to reflux. Maintain refluxing under suction for 1 hour and 45 minutes. Discontinue heating and transfer quantitatively the contents of the potassium hydroxide absorber into a 500-ml iodine flask, washing with distilled water, taking care not to use more than 100 ml of the same. Cool the flask and neutralize with 30 percent acetic acid solution using phenolphthalein solution as the indicator. Add starch indicator solution and titrate immediately against 0·1 N standard iodine solution till the colour changes.

A-4. CALCULATION

A-4.1 Zineb content, percent by mass $= \frac{V \times N \times 13{\cdot}79}{M}$

where,

V = volume, in ml, of standard iodine solution used;

N = normality of standard iodine solution; and

M = mass, in g, of the material taken for the test.

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